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ABSTRACT

In this study, a test of syntactic complexity was developed to be administered to adult beginning readers. The purpose of the test was to determine syntactic competence in the reading of these adults as compared with literate adults. The test was developed on the basis of a review of the literature related to acquisition of syntax, complexity of relative clauses, and order of difficulty of sentence transformation. The test was administered to 21 Adult Basic Education (ABE) students and to 21 college students. The findings proved the hypothesis that the syntactic capability of adult beginning readers would be less advanced than that of literate adults. Complex items were generally more difficult than simple items. It was concluded that the test instrument constructed, with some modifications, could prove to be a good diagnostic instrument for determining reading syntax needs of ABE students. The results of the study provide further research clues for constructing more suitable readability formulas. (Author/TS)

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A STUDY OF THE SYNTACTIC COMPETENCE OF ADULT BEGINNING READERS

Rationale for the Study

Because the field of ABE has few trained specialists with both a reading and an adult education background, few appropriate reading approaches and materials for adult beginning readers are available. Adult educators are especially concerned with the experiences and motivation of adults in ABE programs but have little knowledge of reading as a process; elementary school teachers with some reading training try to apply their pedagogical knowledge when teaching in ABE classes. The result is often an adaptation of child-oriented approaches and materials which are less than satisfactory for adults.

Of particular concern for ABE programs is diagnosis of the level of reading from which to begin an adult's study. ABE teacher judgments are not "in frequent agreement with readability formulas on publisher's approximations."¹ Publishers' approximations of readability of material are recognized as being of dubious value, thus the reliance on readability formulas. Recently the criteria for readability formulas which count syllables, sentence length, or number of words, but do not consider the syntactic structure of the language have been criticized by many reading specialists.

Botel and Granowsky have produced a formula for measuring syntactic complexity and readability which is based on the frequency of occurrence of syntactic structures within a reading selection and assigns counts of

¹Thomas Rakes, "A Comparative Readability Study of Materials Used to Teach Adults to Read," Adult Education, XXIII (#3, 1973): 192.

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of zero, one, two, or three to increasingly complex structures.² The Botel-Granowsky formula, although it is a step in the right direction, does not distinguish between the different syntactic structures, their location in a sentence, and the effect of these two factors on readability. There is still a need to establish an order of complexity.

Simons,³ Marcus,⁴ and other reading specialists have suggested that readability should be based on syntactic competence of readers at different levels of proficiency rather than on numbers of syllables or sentences in one hundred word passages, or on syntactic counts. Research concerning the comprehension of syntactically-complex reading material should precede utilization of readability formulas and should aid in developing more usable formulas. Some research on reading and syntax has been conducted with children. This study is designed to concentrate on the ability of adults to read syntactically complex materials.

This study analyzes the syntactic competence of a group of adult beginning readers who have been exposed to various syntactic forms orally for several years. In order to determine whether or not they are able to read and comprehend syntactically complex structures, it was necessary to construct a test instrument.

²Morton Botel and Alvin Granowsky, "A Formula for Measuring Syntactic Complexity: A Directional Effort," Elementary English, 49: 513-16.

³Herbert Simons, "Comprehension: A New Perspective," Reading Research Quarterly, VI (Spring, 1971): 340-63.

⁴Albert Marcus, "Development of a Diagnostic Test of Syntactic Meaning Clues in Reading," Diagnostic Viewpoints in Reading, ed. Robert E. Leibert (Newark, Delaware: IRA, 1971), pp. 48-63.

Hypotheses

The main hypothesis was:

1. The mastery of syntactic complexity in adult beginning readers is not as advanced as that in literate adults.

Several hypotheses stem from the main hypothesis:

2. Even if adult beginning readers know at least ninety-five percent of a controlled word list, they will have difficulty comprehending those words when they are combined into syntactically complex constructions.

3. The order of increasing difficulty by syntactic complexity will be Active < Question < Negative < Passive < Passive Negative sentences.

4. Complex sentences will be more difficult to read and comprehend than simple sentences.

5. The task of finding two sentences which constitute a complex sentence will be more difficult than the task of choosing from three sentences most like a key sentence. The task of finding one sentence which is different from a group of four sentences will be the easiest of the three tasks.

Definition of Terms

1. Literate reader: one who is able to read material at about a seventh grade level, the average estimate in current literature.

2. Adult beginning reader: one who cannot read at a literate level, did not complete high school, and is enrolled in an ABE program.

3. Syntax: the ordering of words in a sentence which is acceptable grammatical structure and makes sense.

4. Transformational - Generative Grammar: a device for enumerating and providing a theory-based description to an infinite variety of well-formed sentences in a language. In the 1957 Syntactic Structures model (Noam Chomsky) used in this study all sentences are derived from a small number of basic syntactic sequences (kernels) by the sequential application of transformational rules.

5. Kernel sentence: the simple structure underlying a sentence.

6. Transformation: a rule which rearranges, adds to, or deletes from the constituents of a sentence.

7. Simple Sentence: a sentence with one subject and one verb inflected for present or past tense. This excludes compound structures joined by and, or, etc.

8. Complex Sentence: a sentence which contains an embedding. In this study, the only type of complex sentence used contains a relative clause interrupting the subject and verb.

9. Embedding: the process of forming a complex sentence by combining with another sentence that has a co-referential noun. In this study an adjective before a noun is not considered the result of an embedding.

10. Relative Clause: an embedded sentence in which the relative pronoun who or that takes the place of the co-referential noun of the main clause.

Limitations of the Study

This study was restricted as follows:

1. The sample for this study was small, limited by circumstances

of the local ABE program. Therefore, the results cannot be generalized to the entire ABE population.

2. The sample is limited to one geographic area, a mill town and farming environment in southern Virginia.

3. Although both sexes and Caucasian and Negro races are represented, the number in each category is too few to generalize to an entire sex or race.

4. No Chicanos, Puerto Ricans or other disadvantaged groups often enrolled in ABE programs are represented in this study.

5. This study represents the first major testing with an original test instrument.

6. The definition of simple and complex sentences are necessarily narrow in order to eliminate as many interfering syntactic variables as possible. The findings of this study cannot be generalized to other definitions of simple or complex sentences.

Importance of the Study

This study will provide one measure of the syntactic competence of adult beginning readers. Since no other syntactic study of adult beginning readers has been made, this study will provide questions, directions, and limited data for further research. In addition, some information on the relation of syntactic competence to readability formulas may result, which would be an important contribution to analysis of current ABE reading materials and workbooks. The study has explored a test which can measure levels of competence in adults and provide information on what to teach them. That information should be of importance to any ABE teacher.

Brief Review of Related Research

Many students of language accepted the fact that children's language competence is fairly complete by age five until Carol Chomsky's classic study of children's acquisition of syntax.⁵ She found that some children have a surprisingly late acquisition of some syntactic forms. She recommended that a study of adults be made to determine if adults have acquired complete syntax competence. Lois Sanders⁶ investigated the syntactic competence of literate adults using Chomsky's study as a base. Her findings support Chomsky's view that some competent adult speakers may not have acquired some syntactic structures. A study by Kramer, Koff, and Luria,⁷ using some of the same subjects Chomsky had used, illustrated that no group of young adults tested achieved one hundred per cent accuracy on syntax. They speculated that syntactic structures learned late in life may not ever be completely mastered.

Several studies of oral and written language indicate that a particularly difficult structure for mature adults as well as children is the relative clause. Cook⁸ found that relative clauses interrupting a subject and verb were difficult to comprehend. Studies by Strickland, Loban and

⁵Carol Chomsky, The Acquisition of Syntax in Children From Five to Ten, (Cambridge, Mass.: MIT Press, 1969).

⁶Lois Sanders, "The Comprehension of Certain Syntactic Structures by Adults," Journal of Speech and Hearing Research, 14(December, 1971): 739-45.

⁷Pamela Kramer, Elissa Koff, and Zella Luria, "The Development of Competence in an Exceptional Language Structure in Older Children and Young Adults," Child Development, 43: 121-30.

⁸Vivian Cook, "The Comparison of Language Development in Native Children and Foreign Adults,," IRAL 11(1973): 11-20.

Hunt⁹ substantiate her findings.

Albert Marcus,¹⁰ in testing for syntactic meaning clues in reading with intermediate level students (above fifth grade), also found that complex sentences in which relative clauses interrupted the subject-verb sequence of the independent clause were more difficult to understand than complex sentences in which the subject and verb were not separated.

A review of research related to the difficulty of multiple transformations indicates that some types of relativized sentences might be easier to comprehend than others because they involve fewer transformations. Miller¹¹ found that subjects took longer to match sentences which had more complex transformational rules than to match sentences with simpler transformational rules. Gough and Slobin¹² elaborated on Miller's research. Although the order of difficulty they found was only a partial substantiation of Miller's order, there seems to be an order of acquisition and comprehension of sentence transformations based on the time required to select forms and the comprehension of the forms. This order may be: Active < Passive < Negative < Passive-Negative or Active < Negative <

⁹Ruth Strickland, The Language of Elementary School Children, (Indiana University: Bulletin of the School of Education, 1962); Walter Loban, Language Ability in Grades 7, 8, and 9, (University of California at Berkeley: Cooperative Research Project #1131, 1964); Kellogg Hunt, Grammatical Structures Written at Three Grade Levels, (Champaign, Ill.: National Council of Teachers of English, 1965).

¹⁰Albert Marcus, "The Development of a Diagnostic Test," pp. 48-63.

¹¹George Miller, "Some Psychological Studies of Grammar," American Psychologist, 17(1962): 748-62.

¹²Philip Gough, "Grammatical Transformations and Speed of Understanding," Journal of Verbal Learning and Verbal Behavior, 4(1965): 107-11; Dan Slobin, "Grammatical Transformations and Sentence Comprehension in Childhood and Adulthood," Journal of Verbal Learning and Verbal Behavior, 5(1966): 219-27.

Passive < Passive-Negative. Questions as sentence structures seem to develop at roughly the same time as Negatives.¹³ Quigley¹⁴ found the Question to be a difficult form for subjects because they consistently confused the question and the *wh*-marker for relatives.

In summary, ability to understand syntactically complex forms in written material, specifically relative clauses, is a measure of a good reader. If adults, tested from college classes as many of the subjects in the studies cited were, cannot understand some syntactic forms then it is likely that adult beginning readers would have even more difficulty. This difficulty may have been hindering their reading process for several years.

Construction of a Test of Syntactic Competence

A test to determine the ability of the adult beginning reader with syntactic complexities was developed on the basis of the research reviewed. Simple sentence constructions were selected for testing since this form is closest to the kernel in phrase structure and contains no embeddings. It was assumed that because few transformations are involved in a simple sentence, it is easier to comprehend. The particular complex form included, a sentence containing a relative embedding in subject position, was selected on the basis of research indicating that it is a difficult form for many students.

¹³Roger Brown and Camille Hanlon, "Derivational Complexity and Order of Acquisition in Child Speech," Cognition and the Development of Language, John Hayes, ed. (N.Y.: Wiley and Son, 1970), pp. 11-53.

¹⁴Stephen Quigley, Rationale for the Construction of the Test of Syntactic Ability, (University of Illinois at Urbana-Champaign: Institute for Research on Exceptional Children, July, 1971).

The test was constructed to include Active, Question, Negative, Passive, and Passive-Negative sentence types. The purpose for this inclusion was to determine whether or not an order of difficulty of these types exists for adult beginning readers as it seems to for children. The ordering of difficulty, $A < Q < N < P < P-N$, was determined on the basis of research reviewed and on the number of transformations required in the sentence form.

The test instrument includes a total of fifty key items, five items in each category of Active Simple, Active Complex, Question Simple, Question Complex, Negative Simple, Negative Complex, Passive Simple, Passive Complex, Passive-Negative Simple, and Passive-Negative Complex. Twenty-five are simple and twenty-five are complex sentences. Table #1 illustrates this organization.

The key items were arranged under three types of tasks. These tasks were selected to determine if subjects understand the syntax of items and can demonstrate his understanding by selecting a rearrangement of the syntax of the items. Task A was designed to see if subjects could select from four alternatives one sentence most like the underlined or key item, that is, a paraphrase. Task B was designed to see if subjects could select from four alternatives two sentences which make up the underlined key item. Task C was designed to see if subjects could select one sentence with a different meaning from a group of four sentence alternatives. The vocabulary within a key item and its alternatives are as similar as possible, with the main variation syntactic. Sixteen items were constructed to fit into Task A, seventeen items into Task B, and seventeen items into Task C. Ordering of items was by selection at random without replacement.

TABLE 1
Number of Items by Category,
and Complexity on Syntactic Test

	Active	Question	Negative	Passive	Passive- Negative	Totals
Simple S	5	5	5	5	5	25
Complex S	5	5	5	5	5	25
Totals	10	10	10	10	10	50

Every effort was made to control for vocabulary knowledge and for interest in material. The Laubach Streamlined English Word List, which contains words Laubach has determined should be part of an adult beginning reader's vocabulary, was used. From the Laubach list, 160 words were selected in addition to eleven other words judged to be simple and within an adult beginning reader's experience and reading exposure. This total of 171 words was then used to construct all fifty items. The criterion for passing the word list was ninety-five per cent accuracy. Up to nine errors were allowed because many words can be recognized in a sentence when they are not recognized in isolation.

Sentences of ten syntactic types which can be created with 171 words are limited. However, attention was given to making them as close to the experiences of adults as possible. Situations dealing with workers, bosses, and shifts were put in the sentences. This control for interest was considered particularly important to provide for a totally adult rather than child-oriented test.

Validity established for the test instrument was mainly content validity. The test items were submitted to reading and language experts for critical examination. On the basis of these criticisms, the test items were revised several times before a final draft was agreed upon. To provide some reliability, the items were written as unambiguously as possible; five items in each category were included to provide sufficient items to establish some measure of reliability and yet provide for a psychologically tolerable test length for adults; and instructions were standardized to be read to each group with the same wording and clarity.

Description of the Subjects

There were twenty-one subjects in the adult beginning readers group

and twenty-one subjects in the college group. The adult beginning readers were students in two ABE programs in southern Virginia. They were basically lower and lower-middle class with blue collar occupations. The college subjects were juniors and seniors from a small college in southern Virginia. They were of middle and upper-middle class background and from many areas in Virginia.

Administration Techniques

The examiner visited the ABE programs for two evenings preceding any formal testing. These visits enabled the examiner to observe and to establish some familiarity and rapport with the subjects. On the third evening, testing began on an individual basis. An oral language sample was taken. Questions were asked to relax the subject and to initiate some conversation which would indicate the subject's competence in oral language. The subject was then asked to read the list of words. The examiner noted errors. When there was a question of pronunciation caused by dialect interference, the examiner asked the subject to give a sentence using the word. After administration of the word list, the first testing session was terminated.

The conversations were analyzed and the word lists scored. If the subject was judged proficient in oral communication and achieved ninety-five per cent on the word list, he was requested to return for the syntactic competence test.

After all individual testing was completed, the subjects were gathered for testing in a small group of seven or less during an evening. Directions were read from a standardized form. A sample was worked orally and checked. Testing began with Task A. No help with sentences or vocabulary

was given during testing. A break of five minutes was given between each section or task.

Administration techniques for the college group were similar to those for the adult beginning readers. The instructor judged that all students were competent in oral language; therefore, individual interviews were waived. All subjects were administered the word list. The syntax test was administered with the college group receiving exactly the same directions, samples, and breaks as the adult beginning readers.

Analysis of the Data

The adult beginning readers were very apprehensive about testing, but were motivated and wanted to cooperate in hopes that the information the examiner gained would aid in their reading progress. By contrast, the college students were excited and enthusiastic.

Each subject was considered individually according to several factors which provided a profile on which to judge test performance. Factors included were: sex, race, last grade completed, age, number of words missed on word list, number of errors on syntactic test, error types, completion time per task, and number of errors per task. Frequency counts were taken from this data. Percentages of errors per category were determined. These are illustrated in Tables 2 and 3.

The adult beginning readers made four times as many errors on the test as the college group did. In both groups, complex sentences were more difficult than simple sentences across categories. However, in individual categories, the simple sentences were sometimes more difficult than the complex sentences. Order of difficulty varied greatly. Question complex sentences were clearly the most difficult group of sentences for both

TABLE 1
Syntactic Errors of Adult Beginning Readers*

	A	Q	N	P	P-N	Totals
Simple	23 22%	22 21%	11 10%	20 19%	19 18%	95 18%
Complex	16 15%	67 64%	19 18%	17 16%	13 12%	132 25%
Totals	39 19%	89 42%	30 14%	37 18%	32 15%	227 22%

*Possible errors in each category equal 105.

TABLE 2
Syntactic Errors of College Group*

	A	Q	N	P	P-N	Totals
Simple	2 2%	3 3%	1 1%	7 7%	3 3%	17 3%
Complex	2 2%	19 18%	4 4%	2 2%	7 7%	34 6%
Totals	4 2%	22 11%	5 2%	9 4%	10 5%	50 5%

*Possible errors in each category equal 105.

TABLE 3
Order of Difficulty by Sentence Category,
Based on Tables 2 and 3

	Simple Sentences	Complex Sentences
Adult Beginning Readers	$N < PN < P < Q < A$	$PN < A < P < N < Q$
College Students	$N < A < Q = PN < P$	$A = P < N < PN < Q$

groups. To further illustrate differences between and within groups, frequency graphs are provided in Figures 1, 2, 3, and 4. The time for completion of the three tasks and the number of errors per task were averaged for each group. The order of difficulty was found to be $B < A < C$ in every case.

Hypotheses one, two, four, and five were substantiated. Hypothesis three was not substantiated. Hypothesis one stated that

Syntactic complexity in the reading patterns of adult beginning readers is not as advanced as that of literate adults.

The data provide evidence that adult beginning readers consistently missed more items than the literate, college group did. The beginning readers missed twenty-two per cent of the test questions. The literate adults missed only five per cent. Beginning readers averaged forty-two minutes for test completion; college students averaged seventeen minutes. Even though the beginning readers were on the average older than the college students and quite capable in oral language, their syntactic competence in reading was not as advanced as that of the literate adults.

Hypothesis two stated that

Even if an adult beginning reader knows at least ninety-five per cent of a controlled word list, he will have difficulty comprehending those words when they are combined into syntactically complex sentences.

All adult beginning readers accepted for this study knew at least ninety-five per cent of the controlled word list. However, the data gathered indicate that the adult beginners missed many sentences on the test of syntactic complexity. Even adult beginners who scored one hundred per cent on the word list made errors. Several literate adults who knew one hundred per cent of the word list made errors also. Knowing the word list did not in itself enable subjects to understand sentences which were syntactically complex.

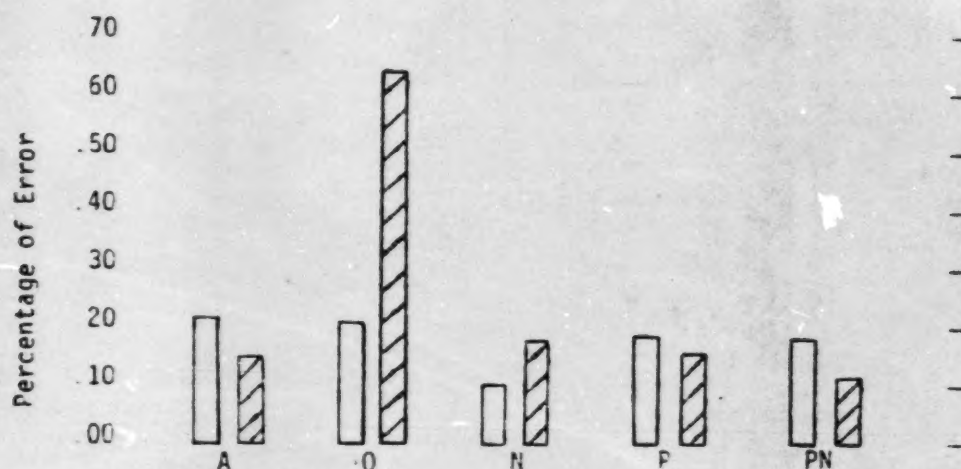


Figure 1. Comparison of Difficulty: Simple vs. Complex Sentences Across Hierarchies, Adult Beginning Readers

S=  C= 

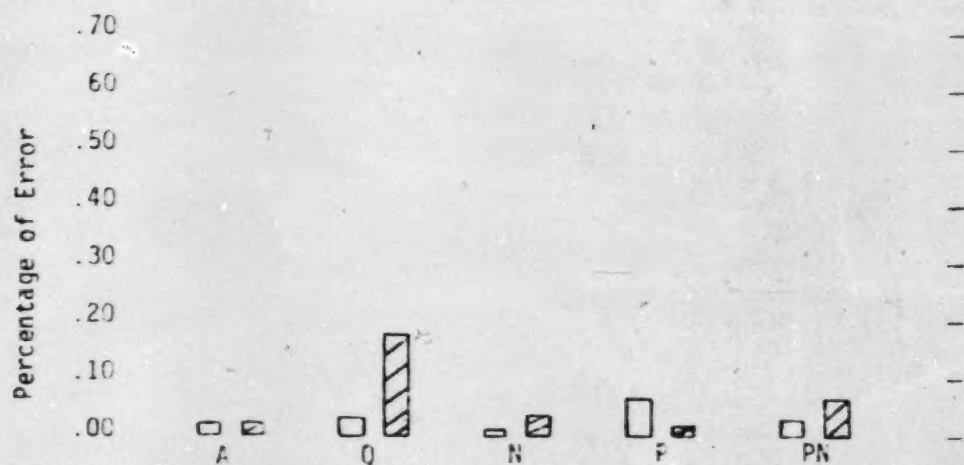


Figure 2. Comparison of Difficulty: Simple vs. Complex Sentences Across Hierarchies, College Group

S=  C= 

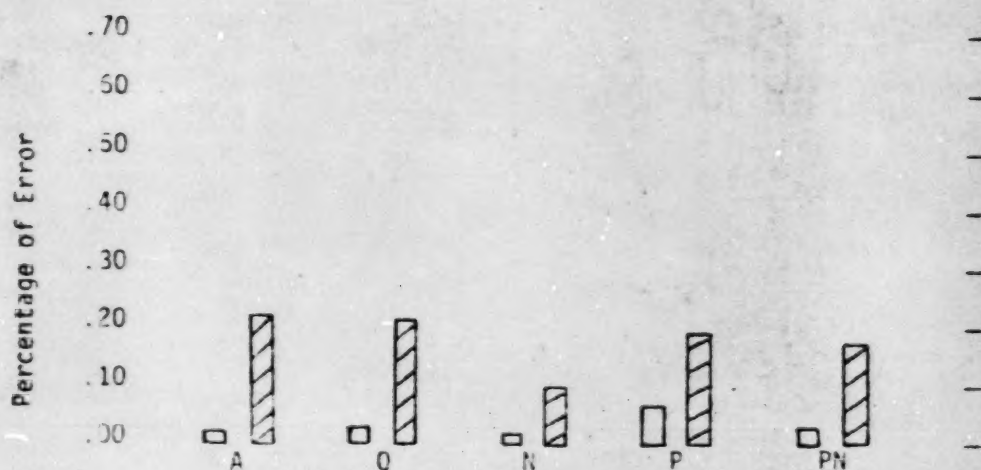


Figure 3. Comparison of College and Adult Beginning Reader Groups on Simple Sentences Across Hierarchies

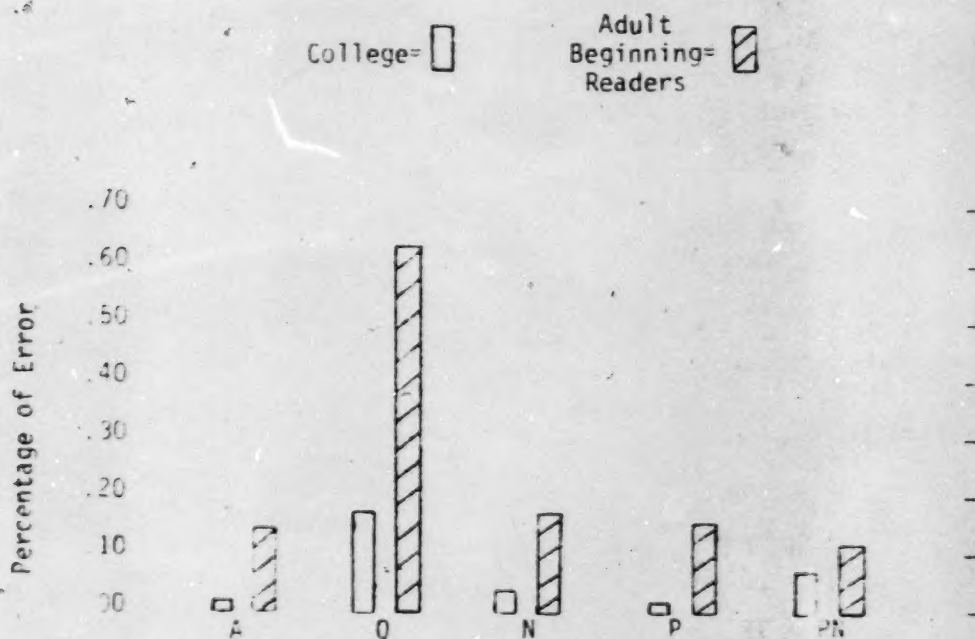


Figure 4. Comparison of College and Adult Beginning Reader Groups on Complex Sentences Across Hierarchies

Hypothesis three stated that

The order of difficulty by syntactic complexity will be: $A < Q < N < P < PN$.

The order of difficulty as measured on this test varied in each group. As illustrated in Table 4, the order of difficulty of simple sentences for adult beginning readers was: $N < PN < P < Q < A$, and of complex sentences: $PN < A < P < N < Q$. The order of difficulty of simple sentences for literate adults was: $N < A < Q = PN < P$, and of complex sentences: $A = P < N < PN < Q$. The order of difficulty was not consistent nor was it in any case the hypothesized order.

Hypothesis four states that

Complex sentences will be more difficult to read and comprehend than Simple sentences.

Complex sentences were found to be more difficult than simple sentences for both groups. The difference in difficulty was not as great as expected. Difficulty increased seven per cent on complex sentences for the adult beginning readers. Difficulty increased only three per cent on complex sentences for literate adults. The data indicate that Active Simple, Passive Simple, and Passive Negative Simple sentences were more difficult for adult beginners than the complex sentences in these categories. Scores for literate adults indicate that Passive Simple sentences were harder than Passive Complex sentences. Although Complex sentences were more difficult when considering totals, within groups this difficulty was not substantiated. Hypothesis four can be accepted with reservations.

Hypothesis five states that

The task of finding two sentences which comprise a complex sentence will be more difficult than the task of choosing from three sentences one most like a key sentence. The task of finding one sentence that is

different from a group of four sentences will be the easiest of the three tasks.

Completion time per task and errors per task were averaged. Task B, finding two sentences which comprise a complex sentence, was most difficult. Task A, choosing one sentence most like a key sentence, was consistently second in order of difficulty. Task C, finding one sentence that is different, was easiest.

Because the sample for this study was small, an approach which included a close analysis of several subjects was indicated. An item analysis of the top and bottom five in each group was made. The top subgroup of the adult beginning readers demonstrated good oral language flow; they used simple, compound, and complex sentences in active, negative, and passive voices. The average grade of completion for this subgroup was 9.4. The average age for this subgroup was 29.4 years. Only one person missed any words; he missed one. Their average number of errors on the syntax test was 3.6. The items missed most often were complex questions; this error pattern paralleled findings for the total group. The mean completion time for this group was: A - 9 minutes; B - 13.20 minutes; C - 7.40 minutes; total - 29.60 minutes. There were two Negro males and two Caucasian males in this subgroup; there was one Negro female.

The bottom subgroup of the adult beginning readers demonstrated good oral language flow; they used simple, compound, and complex sentences in active, negative, and passive voices. The average grade of completion for this subgroup was 5.0. The average age for this subgroup was 34 years. Their average number of errors on the word list was 6.8. Their average number of errors on the syntax test was 23.2. Errors

were quite varied, but complex questions were missed by all members of this subgroup. The mean completion time for this subgroup was: A - 24.4 minutes; B - 24.2 minutes; C - 16.4 minutes; total - 65 minutes. There were two Negro males and one Caucasian male in this subgroup; there were two Caucasian females.

The top subgroup of the literate readers were judged to be competent in oral language. They were juniors or seniors in college. Their average age was 30.2 years. No subjects missed any words on the word list. No subjects missed any items on the syntax test. Their mean completion time was: A - 5.6 minutes; B - 5.4 minutes; C - 3.4 minutes; total - 14.4 minutes. All subjects in this group were Caucasian females.

The bottom subgroup of college readers were judged to be competent in oral language. They were juniors or seniors in college. Their average age was 24.5 years. No subjects missed any words on the word list. They did make an average of 5.2 errors on the syntax test. The main concentration of errors was with complex questions. Their mean completion time was: A - 7.6 minutes; B - 7.6 minutes; C - 6 minutes; total - 21.2 minutes. There were two Negro females and one Negro male in this subgroup; there were two Caucasian females in this subgroup.

In summary, the top subgroup of the college group was superior in performance to the other three subgroups. The top subgroup of the adult beginning readers made fewer errors but took more time than the bottom subgroup of college students. The bottom subgroup of the adult beginning readers was inferior in performance to the other three subgroups. Complex questions were the most difficult items in each subgroup making errors.

Discussion of Results

Several implications were made on the basis of the analysis of subgroups. First, the item analysis indicated that the oral language patterns for all subgroups were fluent. Oral language capability was apparently not an influence on the comprehension of reading syntactically complex forms. This was not surprising; adult beginning readers have had to survive in a literate society by covering up their lack of reading skill with good oral communication skills.

Second, there seemed to be little difference discernible between the performance of Negro, white, male, or female subjects. The sample was very limited, so the opportunity to compare these factors was not great. However, with the exception of the bottom subgroup of literate adult readers, the distributions seemed fairly balanced. All three Negroes in the literate adult group placed in the bottom subgroup. The only male, also a Negro, placed there. The reason for this placement could be related to the standards of recruitment at the college from which the subjects were drawn. To recruit Negroes, admission standards had been lowered. Therefore, it is possible that these Negroes did have lower reading skills than their white classmates. It is also possible that the placement means very little because of the limited sample.

Third, age may be a factor in the reading comprehension of syntactically complex sentences. In the literate adult subgroups, older subjects performed better than the younger subjects. When one is literate, the constant stimulation and exposure to reading undoubtedly aids comprehension of difficult syntactic structures. Older age would increase the opportunities for such exposure. In the adult beginning readers subgroups, older subjects performed worse than the younger subjects. Older age seemed to

be a detriment. The older adult beginning readers may have been further away from exposure to reading complex syntactic structures by virtue of being away from school so long. Also, the older subjects tended to have had less formal schooling, and so less academic exposure to complex syntax. Younger subjects had had more schooling more recently, and thus had had exposure to more written syntactic variety.

Fourth, the poorer scorers within the subgroups missed about as many simple as complex sentences. The poorer scorers seemed confused by many syntactic forms, whereas the high scorers missed mainly complex questions. Adult beginning readers with relatively high reading ability may need attention to complex questions. Those with relatively low reading ability need attention to many syntactic forms.

Fifth, the time factors indicated that generally the more time spent on the test meant more errors rather than less. The subjects either knew the item within a short time lapse or unlimited time didn't help.

Sixth, errors on the word list did not present a large problem in comprehending those words in the sentences. A check of words missed and whether items missed contained those words was made. Few items missed included words not known on the list. It can be assumed that the sentence provided enough redundancy cues and context to facilitate comprehension.

Seventh, many adults in both the adult beginners and literate groups did not have a perfect understanding of syntactically complex sentences in their reading. This finding reaffirms research previously cited. It also reflects a lack of teaching to syntactic comprehension and seems to be a matter for concern in developing teaching materials.

Eighth, the syntactic test instrument developed for this study did indicate areas of difficulty for different subjects. This test, with

some improvements, could be utilized to aid in diagnosing areas of syntactic difficulty for individual students.

Several implications were made concerning the hypotheses. Hypothesis one was substantiated. Although adult beginning readers had good oral language capability and could listen and speak with proficiency, they did not achieve scores as high as the literate adults on the reading syntax test. They would need instruction in reading syntactically complex structures to achieve proficiency. Their immaturity in reading syntactically complex structures apparently contributed to their reading difficulties. This is assumed since they did not read as many sentences correctly although they knew the words. The adult literates read more sentences correctly; it can be inferred that they did not have the reading difficulties that the adult beginning readers did because of their college level and reading experience.

Hypothesis two was substantiated. When the word errors were itemized, it was also shown that not knowing a word on the list did not usually deter success on a given item. Therefore, knowing the list of words did not in itself enable subjects to understand the syntax test items. Syntax must have played a large part in the reading comprehension process, much more than words as isolated units. This finding seems to have relevance in designing reading programs for ABE classes which would concentrate on the arrangement of words and their combined meaning rather than on words as simple units.

Hypothesis three was not substantiated. Complex questions were the most difficult sentence structure measured. The use of wh-markers, and what the question part of a complex sentence is, need consideration in teaching situations, rather than building on an order of difficulty. It

appears that the order of acquisition and difficulty for children is not the same as for adult beginning readers. Adults are apparently at different stages of development depending on their background and previous exposure to reading syntax. The number of transformations taken to arrive at a surface structure seems to have little relation to an order of difficulty.

Some information for use in readability formula was gained from this study. Complex question and negative complex structures might be given more weight on readability formulas. Simple sentences generally should be given less weight.

Hypothesis four was substantiated with reservations. Complexity as a total was more difficult than simplicity. Since some simple sentence categories were harder than complex categories, it could be that redundancy cues available in complex sentences aided their comprehension. Complex sentences generally should be given more weight on readability formulas than simple sentences.

Hypothesis five was substantiated. The task of finding two sentences from an embedded sentence was harder because all of the sentences involved were complex, so there was more involved to do in the task. Two responses had to be checked rather than one. It seems apparent that adult beginning readers in this study needed to be taught more about relative clause constructions and embeddings.

Finding a sentence most like the underlined sentence was hard. Since Task A contained many simple sentences, some of which required deletion or alteration, the simplicity could be a factor. Adults were not proficient with this task; some teaching to such reasoning processing as finding like items from different ones seems important to enhance reading skills.

Finding a different sentence from four alternatives might have been easiest because it was the last task and subjects were acclimated to the test by then. Different items may have been easier to discern among like items than vice-versa. These findings will aid in future test instructions.

This research study has demonstrated that some adults have not mastered many syntactically complex structures. There is a need to explore these findings in greater depth with a larger sample. If a much larger sample were tested, subjects including many males, females, Negroes and Caucasians could be represented. Order of difficulty could be better determined. Findings could be applied to a population with a higher confidence level.

Materials currently used in ABE classrooms should be evaluated in terms of current findings. The purpose of the evaluation would be to determine if sentences found to be difficult for adult beginning readers are now in use in these materials.

Summary

A test of syntactic complexity was developed to be administered to adult beginning readers. The purpose of the test was to determine the syntactic reading competence of these adults as compared with literate adults. The test instrument was developed on the basis of a review of literature related to acquisition of syntax, complexity of relative clauses, and order of difficulty of sentence transformations.

Implications of the study are that adult beginning readers may need instruction to syntactic complexities. The test instrument constructed, with some alterations, could prove to be a good diagnostic instrument for determining reading syntax needs of ABE students.

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APPENDIX

Sample Items from the Test of Syntactic Complexity

- A. In each group of sentences below, check the one sentence most like the underlined sentence.

Active Simple Sentence:

The woman reads good books.

The books are read by the good woman.

The good woman reads books.

Good books are read by the woman.

The good woman reads books.

Negative Complex Sentence:

The man who didn't show up gave us an excuse.

The man who didn't give us an excuse showed up.

The man who gave us an excuse didn't show up.

The man did not give us an excuse.

The man showed up to give us an excuse.

- B. In each group of sentences below, the underlined sentence can be made into two sentences. Check the two sentences.

Question Complex Sentence:

Will the boss who says a job is open hire me?

Who says a job is open?

The boss says a job is open.

The boss will hire me.

Will the boss hire me?

Passive Negative Complex Sentence:

The boss who fires the men will not be liked by anyone.

Anyone will like the boss.

The boss fires the men.

No one will like the boss.

The boss will not fire the men.

- C. In each group of sentences below, three of the four sentences have the same meaning. Check the one sentence which has a different meaning.

Passive Simple Sentence:

The car was given to the woman by the man.
The man gave the woman a car.
The car was given to the man by the woman.
The man gave a car to the woman.

Active Complex Sentence:

Someone destroyed the book I liked best.
Someone destroyed the book that I liked best.
Someone I liked destroyed the book I liked best.
The book that I liked best was destroyed by someone.